



RRD OPERATIONAL MEMORANDUM NO. 3

SUBJECT: PART 213 LEAKING UNDERGROUND STORAGE TANK (LUST) SITE CLASSIFICATION SYSTEM

PURPOSE: This operational memorandum establishes a site classification system for LUST sites as required under Section 21314a of Part 213, Leaking Underground Storage Tanks (LUST), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA). This operational memorandum supercedes previous DEQ operational memorandum regarding the site classification system for LUST sites.

The purpose of the site classification system is to allow the Remediation and Redevelopment Division (RRD) and owner/operators (O/Os) of LUST sites to direct their resources to those sites that present the greatest threat, and are in most urgent need of initial response actions. Site class ranges from Class 1, where there is an immediate threat to the public or environment, to Class 4, where there is no demonstrable long-term threat. Initial response actions shall be implemented immediately to abate imminent risk to public health, safety, and welfare, and the environment. Initial response actions are to be performed simultaneously with the risk-based corrective action (RBCA) process, and the requirements of Part 213 of the NREPA (Part 213).

All LUST sites are required to be classified by a Qualified Underground Storage Tank Consultant (QC) retained by the O/O, even when an O/O has only one LUST site. To classify a site, the QC completes a site assessment to identify release sources; free product and concentrations of the chemicals of concern in affected media; exposure pathways; affected or potentially affected human and environmental receptors; and regional geologic and hydrogeologic characteristics. Available historical information, such as inventory records; leak detection and UST system testing results; and UST removal records, as well as information obtained from a visual inspection of the site, should also be included in the assessment. Initial site classification should be based on an adequate site assessment completed in a short period of time, and may not require extensive sampling and testing.

SITE CLASSIFICATION SYSTEM: The attached site classification system is based on the current and projected degree of threat to the public and environment, i.e., immediate, short-term (0 to 2 years), long-term (greater than 2 years), or no demonstrable long-term threat. The degree of threat should be the defining factor in the classification of any LUST site. The classification system identifies example exposure pathways and example site scenarios representative of the degree of risk. The QC should evaluate all potential exposure pathways and classify the site according to the pathway and scenario that poses the greatest risk, but site evaluation should not be limited to these scenarios. The listed initial response/corrective actions represent potential responses to the associated exposure pathways and scenarios and may not be appropriate for all sites. Initial response actions should be consistent with the conditions of a specific site. As more information becomes available, or response actions have been initiated to abate a risk, the site may be reclassified. Current site class, site assessment information, and a description of any initial response actions taken or initiated are to be reported in the Initial Assessment Report (IAR) (EQP 3841), due 90 days after discovery of a release. The QC must, through use of required report forms, advise the RRD any time a site is reclassified after the IAR.



Owners and Operators of LUST sites, or their QCs, are required to immediately begin, and expeditiously perform, initial response actions specified in Section 21307(2) of the NREPA. Immediately following initiation of response actions, the QC is required to complete corrective actions identified in Section 21307(3) of the NREPA, and comply with reporting requirements specified in Part 213, regardless of how a specific site is classified. However, if no imminent risk to public health, safety, and welfare, and the environment exists at the site, the RRD may allow corrective action to be conducted on a schedule other than that specified in Part 213 upon prior approval. Requests for an alternate schedule must be submitted in writing to the appropriate RRD District Supervisor after submittal of the IAR. Requests covering multiple RRD districts should be submitted to the RRD Field Operations Section Chief. The request must include a listing of all LUST sites by address and county location where an alternate corrective action schedule is requested or has been previously approved. The approved schedule does not relieve the O/O of any notification responsibilities specified in Part 213.

The site classification system should be viewed as a means for the O/O to prioritize sites and identify those that need immediate attention. The classification system should not be used to direct corrective action activities at the site, nor should it be used to prioritize sites within a given classification. For example, a Class 4 site has no demonstrable long-term threat. However, it should not be ignored when it could be closed with minimum effort.

If a site has not been classified by the O/O or QC, the RRD will assign it as a Class 2 site (short-term, 0-2 years, risk) until the RRD is presented with evidence that either a higher or a lower site classification is more appropriate. For example, if the groundwater and contaminant velocities have not been determined for a groundwater contaminant plume, the RRD will assume that the plume will reach the target(s) within two years and classify the site as Class 2.

If the site has been classified as a Class 4 site (no demonstrable long-term risk) Section 21312a (1) of Part 213 requires that within 30 days of completion of corrective actions the QC shall complete and submit a Closure Report to the RRD.

This memorandum is intended to provide guidance to division staff to foster consistent application of Part 213, Leaking Underground Storage Tanks, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. This document is not intended to convey any rights to any person nor itself create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

Andrew W. Hogarth
Remediation and Redevelopment Division

Dated: 8/21/03

Attachment

Distribution: RRD Supervisors
RRD Executive Secretary
RRD Project Managers

CLASS 1*Page 1 of 2 (Class 1)*

<u>SITE</u>	General Scenario: Immediate threat to human health, safety, environment, or sensitive environmental receptors.	General Immediate Response: Immediately notify the local units of government; e.g., fire department, local health department, the Department of Environmental Quality (DEQ), and all affected and potentially affected parties; e.g., property owners, tenants, easement holders, and utility authorities. Implement initial response actions immediately to abate the risks to all applicable receptors.
<u>Exposure Pathway</u>	<u>Scenario</u>	<u>Initial Response/Corrective Actions</u>
Each Pathway	Free product is present, as defined in Part 213 of the NREPA.	Empty leaking underground storage tank system(s). Prevent further free product migration by appropriate containment measures. Institute free product recovery. Follow reporting and interim response/corrective action requirements in Part 213, and Part 213 Operational Memorandum No. 7.
Fire/Explosion	Explosive vapor levels are present in a residence or other building. Explosive levels are present when vapor concentrations are greater than 25 percent of the Lower Explosive Limit (LEL).	Evacuate occupants; begin abatement measures such as subsurface ventilation, or building pressurization. Immediately notify the fire department, the utility authorities (if appropriate), the DEQ, and other applicable agencies. Identify the source of the vapors and begin corrective actions to abate the source; e.g., empty leaking UST systems, recover free product, treat or remove contaminated soil and/or groundwater.
	Explosive vapor levels are present in subsurface utility system(s), but no buildings or residences are impacted.	Evacuate immediate vicinity; begin abatement measures such as ventilation. Immediately notify the fire department, the utility authorities, the DEQ, and other applicable agencies. Identify the source of the vapors and begin corrective actions to abate the source; e.g., empty leaking UST systems, recover free product, treat or remove contaminated soil and/or groundwater.
Drinking Water Ingestion	A public or private water supply well, public water supply line or public surface water intake is contaminated or immediately threatened. Contaminated, as defined in Section 21302 (c) of Part 213, means the presence (i.e., above method detection limits) of a regulated substance in soil or groundwater.	Notify user(s), provide alternate water supply, hydraulically control contaminated water, or install point-of-use water treatment. Immediately notify local health department and the DEQ. Refer to Part 213 Operational Memorandum No. 11 for additional guidance on the drinking water ingestion pathway.
Direct Contact	Exposed soil or groundwaters exceed direct contact Risk Based Screening Levels (RBSLs).	Remove, cover, or reliably restrict access to the contaminated media. Refer to Part 213 Operational Memorandum No. 4, Attachments 5 and 11, for guidance on the direct contact pathway.
Inhalation	Concentrations of vapors that could cause acute health effects at levels above Michigan Occupational Safety and Health Act (MIOSHA) Short Term Exposure Limit (STEL) are present in a residence or building.	Immediately notify the local health department and the DEQ. Evacuate occupants; begin abatement measures such as subsurface ventilation, or building pressurization. Prevent further vapor migration into buildings or residences. MIOSEA standards may be obtained from the following internet web site: http://www.michigan.gov/cis click on Workplace Safety & Health, then click on Standards & Legislation.

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<u>SITE</u>	General Scenario: Immediate threat to human health, safety, environment, or sensitive environmental receptors.	General Immediate Response: Immediately notify the local units of government; e.g., fire department, local health department, the Department of Environmental Quality (DEQ), and all affected and potentially affected parties; e.g., property owners, tenants, easement holders, and utility authorities. Implement initial response actions immediately to abate the risks to all applicable receptors.
<u>Exposure Pathway</u>	<u>Scenario</u>	<u>Initial Response/Corrective Actions</u>
Inhalation	Concentrations of vapors that could cause acute health effects at levels above MIOSHA STELs are present in subsurface utility system(s), or construction trenches, but no buildings or residences are impacted.	Immediately notify local utility authorities. Begin ventilating subsurface utilities or trenches. Prevent further vapor migration into these areas by identifying and eliminating the source of the vapors.
	Ambient vapor or particulate concentrations exceed concentrations of concern from an acute exposure viewpoint, at levels above the MIOSHA STEL.	Install vapor barrier (e.g., capping, foams, etc.), remove source, or reliably restrict access to affected area.
Groundwater/ Surface Water Interface (GSI)	Contaminated groundwater is discharging to a surface water body or entering a sewer at levels exceeding the GSI RBSLs, or resulting in a visible sheen.	Institute containment measures to prevent further migration in the surface water body and/or sewer. Prevent further contaminated groundwater migration into the surface water body and/or sewers. Follow the interim response/corrective action requirements in Part 213. Determine whether a venting groundwater mixing zone determination is feasible and appropriate. Refer to Part 213 Operational Memorandum No. 8, and Part 31 of the NREPA for guidance. Determine the extent of the impact in the surface water body and/or sewers to determine if corrective action in surface water body or sediments is necessary.
Sensitive Environmental Receptors	A sensitive habitat or sensitive resources (e.g., sport fish, economically important species, threatened or endangered species, wetlands, etc.) are contaminated and adversely affected.	Minimize extent of impact by containment measures and implement habitat management to minimize exposure. Prevent further contaminant migration into the sensitive habitat or wetland.

Class 2

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<u>SITE</u>	General Scenario: Short-term (0-2 years) threat to human health, safety, or sensitive environmental receptors	General Immediate Response: Immediately notify the local units of government; e.g., fire department, local health department, the Department of Environmental Quality (DEQ), and all affected and potentially affected parties; e.g., property owners, tenants, easement holders, and utility authorities. Implement initial response actions immediately to abate the risks to all applicable receptors.
<u>Exposure Pathway</u>	<u>Scenario</u>	<u>Initial Response/Corrective Actions</u>
Each Pathway	Soil samples exceed soil saturation concentrations (C _{sat}) concentrations and/or groundwater samples exceed the solubility limit(s).	Determine whether free product is present, following Part 213 Operational Memorandum No. 7. If free product is present, upgrade the facility to Class 1, and follow the interim response/corrective action requirements in Part 213, and Part 213 Operational Memorandum No. 7. If free product is absent, evaluate all other exposure pathways, determine the risk to the receptors, and implement appropriate corrective actions.
Fire/Explosion	There is the potential for explosive vapor levels to accumulate in a residence, other building, or utility systems. A potential for explosive conditions exists when vapor concentrations are greater than 10 – 25 percent of the LEL and/or groundwater concentrations exceed the Part 201 Flammability and Explosivity screening level.	Assess the potential for vapor migration, through monitoring and modeling, and if necessary, remove the source or install vapor migration barriers. Immediately notify the fire department, the utility authorities (if appropriate) and the DEQ. Refer to Part 201 Operational Memorandum No. 18 for guidance on the explosivity screening level.
Drinking Water Ingestion	A non-potable water supply well is contaminated or immediately threatened.	Notify the owner and user(s), evaluate the need to abandon the well, install point-of-use water treatment, hydraulically control contaminated water, or provide an alternate water supply. Notify the local health department, and the DEQ. Refer to Part 213 Operational Memorandum No. 11 for guidance on the drinking water ingestion pathway.
	Groundwater is contaminated above drinking water RBSLs, and a public or private water supply well is producing from the contaminated aquifer and is located within two years groundwater travel time from the known extent of chemical(s) of concern.	Notify local health department, the DEQ, and all potentially impacted parties. Implement appropriate corrective actions to prevent impact to the water supply well. Monitor water quality in potentially impacted water supply well and in monitoring wells.
Drinking Water Ingestion	Groundwater is contaminated above drinking water RBSLs and a public or private water supply well producing from a different aquifer is located within the known extent of chemicals of concern.	Notify the local health department, the DEQ, and all potentially impacted parties. Monitor the quality of the water supply wells. Determine if the contaminant plume is within the capture zone of the water supply. Evaluate if control is necessary to prevent vertical migration to the supply well. Implement appropriate corrective actions to prevent impact to the water supply well.

Class 2 Site

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<u>SITE</u>	General Scenario: Short-term (0-2 years) threat to human health, safety, or sensitive environmental receptors	General Immediate Response: Immediately notify the local units of government; e.g., fire department, local health department, the Department of Environmental Quality (DEQ), and all affected and potentially affected parties; e.g., property owners, tenants, easement holders, and utility authorities. Implement initial response actions immediately to abate the risks to all applicable receptors.
<u>Exposure Pathway</u>	<u>Scenario</u>	<u>Interim Response/Corrective Actions</u>
Direct Contact	Soil and/or groundwater contamination exceeds the direct contact RBSLs, and is present at depths that could be intercepted by construction or landscaping activities.	Notify potentially affected parties (e.g., property owners, tenants, easement holders, utility authorities), reliably restrict access to the soil, treat or remove contaminated soil, and intercept and treat groundwater. Determine if other exposure pathways are affected and follow initial response and corrective actions. Determine whether land use restrictions are feasible and appropriate during the RBCA evaluation.
Inhalation	Vapors are present in a residence, building, or utility system that could cause acute health effects.	Notify potentially affected parties (e.g., property owners, tenants, easement holders, utility authorities, the local health department, and the DEQ). Limit exposure to vapors. Remove or treat the source and/or install engineering controls (e.g., positive pressure ventilation, seal basements and other subsurface structures) as a vapor barrier. Monitor the vapor concentrations.
	Ambient vapors/particulate matter is present, and can potentially result in an acute exposure.	Evaluate the need for a vapor/particulate barrier (e.g., capping, foams), remove or treat the source or reliably restrict access to affected area. Continue to monitor ambient air concentrations.
	Contaminated groundwater exceeds Part 201 Acute Inhalation Screening Levels, and can potentially result in an acute exposure.	Evaluate for vapors in subsurface structures and buildings. If present, immediately address the acute risks posed by the vapors, see sections above for appropriate actions. Refer to Part 201 Operational Memorandum No. 18 for guidance on Acute Inhalation Screening Levels.
Groundwater/ Surface Water Interface (GSI)	The leading edge of the groundwater contaminant plume is located within two years groundwater travel time distance of a surface water body or a utility trench that could intercept the plume.	Determine whether a venting groundwater mixing zone is feasible and appropriate. Intercept and treat the contaminant plume, or conduct an in-situ treatment of the plume, before it reaches the surface water body or utility corridor. For additional guidance refer to Part 213 Operational Memorandum No. 8, and Part 31 of the NREPA.
Sensitive Environmental Receptors	The leading edge of the groundwater contaminant plume is located within two years groundwater travel time distance of a sensitive habitat or resources (e.g., sport fish, economically important species, threatened or endangered species, wetlands, etc.).	Intercept and treat, or treat in-situ, the contaminant plume before it reaches the sensitive habitat or resources.

Class 3

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SITE	General Scenario: Long-term (>2 years) threat to human health, safety, or sensitive environmental receptors.	General Immediate Response: Assess all other exposure pathways, the risk to the receptors, and take appropriate corrective actions to abate the acute risks.
<u>Exposure Pathway</u>	<u>Scenario</u>	<u>Interim Response/Corrective Actions</u>
Fire/Explosion	Vapor concentrations are less than 10 percent of the LEL and/or groundwater concentrations are below the Part 201 Flammability and Explosivity Screening Level.	Continue to monitor vapor (% LEL), and groundwater concentration. Determine if corrective actions such as building ventilation or pressurization is required to abate the risk of exposure pathways.
Drinking Water Ingestion	Soil is contaminated above leaching to groundwater RBSLs.	Define the extent of contamination, and determine whether the groundwater is contaminated. Follow statutory reporting requirements.
	Groundwater is contaminated above drinking water RBSLs, and potable and/or non-potable water supply wells producing from the contaminated aquifer are located more than two years groundwater travel time from the known extent of the chemicals of concern.	Define the extent of contamination, and follow statutory reporting requirements.
	Groundwater is contaminated above drinking water RBSLs and non-potable water supply wells, producing from a different aquifer, are located within the known extent of the chemicals of concern.	Monitor non-potable well, define the extent of contamination, and follow statutory reporting requirements. Refer to Part 213 Operational Memorandum No. 11 for guidance.
Direct Contact	Soil and/or groundwater exceeding the direct contact RBSLs are located at depths that are not likely to be encountered by construction activities.	Assess all other exposure pathways, define the extent of contamination, and follow statutory reporting requirements.
Inhalation	Soil and/or groundwater contamination exceeds the indoor air inhalation RBSLs, and there is a potential for vapor concentrations to accumulate which may pose a chronic health risk.	Evaluate and implement corrective actions, engineering controls, or use restrictions as necessary to eliminate the health risks to occupants of buildings and other subsurface structures. Follow statutory reporting requirements.
Inhalation	Soil concentrations exceed ambient air inhalation RBSLs, and there is the potential for a chronic exposure from vapors or particulates.	Evaluate and implement corrective actions, engineering controls, or use restrictions as necessary to eliminate the chronic health risks. Follow statutory reporting requirements.

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<u>SITE</u>	General Scenario: Long-term (>2 years) threat to human health, safety, or sensitive environmental receptors.	General Immediate Response: Assess all other exposure pathways, the risk to the receptors, and take appropriate corrective actions to abate the acute risks.
<u>Exposure Pathway</u>	<u>Scenario</u>	<u>Interim Response/Corrective Actions</u>
	Groundwater contamination exceeds the ambient air inhalation RBSLs, posing a chronic health risk.	Evaluate and implement corrective actions, engineering controls, or use restrictions as necessary to eliminate the chronic health risks. Follow statutory reporting requirements.
Groundwater/Surface Water Interface (GSI)	The leading edge of the contaminant plume is located more than two years groundwater travel time distance from a surface water body or a utility trench that could intercept the groundwater plume.	Determine whether a venting groundwater mixing zone request is feasible and appropriate. Determine whether corrective actions are necessary to intercept and treat the groundwater plume before it reaches the surface water body or the utility trench. Refer to Part 213 Operational Memorandum No. 8, and Part 31 of the NREPA for guidance.
Sensitive Environmental Receptors	The leading edge of the groundwater contamination is located more than two years groundwater travel time from a sensitive habitat or resources (e.g., sport fish, economically important species, threatened or endangered species, wetlands, etc.).	Determine whether corrective actions are necessary to intercept and treat the groundwater plume before it reaches the sensitive habitat or resources. Follow statutory reporting requirements.

Class 4
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<u>SITE</u>	General Scenario: No demonstrable long-term threats to human health, safety, or sensitive environmental receptors.	General Immediate Response: All exposure pathways must be evaluated to demonstrate no long-term threats to the receptors.
<u>Exposure Pathway</u>	<u>Scenario</u>	<u>Interim Response/Corrective Actions</u>
	Priority 4 scenarios encompass all other conditions not described in Priorities 1, 2, and 3, and that are consistent with the priority description given above.	Section 21312a of the NREPA requires that within 30 days of completion of the corrective action, the QC complete and submit a Closure Report. The QC should prepare a Closure Report once the site has been classified as a Class 4 site.
Fire/Explosion	No vapors are present.	None required.
Drinking Water Ingestion	Groundwater is contaminated below drinking water RBSLs or potable/non-potable wells will not be contaminated by the chemicals of concern, or the groundwater use is reliably restricted.	The groundwater plume must be completely delineated. There must be adequate demonstration that receptors will not be contaminated in the future. Refer to Part 213 Operational Memorandums No. 9 through No. 11 for guidance. Follow statutory reporting requirements.
	Soil is contaminated below leaching to groundwater RBSLs, or the leaching to groundwater pathway has been eliminated, or the land use has been reliably restricted.	Refer to Part 213 Operational Memorandum No. 4, Attachment 7, and Part 213 Operational Memorandum No. 11 for guidance. Follow statutory reporting requirements.
Direct Contact	Soil and groundwater contamination are below direct contact RBSLs, or the land use is reliably restricted.	Follow statutory reporting requirements.
Inhalation	Soil and groundwater contamination are below volatilization criteria, or the land use is reliably restricted.	Follow statutory reporting requirements.
Groundwater/Surface Water Interface (GSI)	Groundwater contamination is below GSI RBSLs, or there is no potential for groundwater contaminated above GSI RBSLs to reach surface water bodies.	All preferential migration pathways need to be fully evaluated. Follow statutory reporting requirements.
Sensitive Environmental Receptors	There is no potential for contamination to affect sensitive habitat or resources (e.g., sport fish, economically important species, threatened or endangered species, wetlands, etc.).	All preferential migration pathways need to be fully evaluated. Follow statutory reporting requirements.